IN THE CLAIMS

Please amend the claims as presented below in the Listing of Claims. This Listing of Claims will replace all prior versions and listings of claims in this application.

Listing of Claims:

1. **(Currently Amended)** A method of receiving data in a multiple-input multiple-output (MIMO) communication system, comprising:

   obtaining, from a plurality of receive antennas at a receiving entity, a plurality of received symbol streams for a plurality of data symbol streams sent by a plurality of transmitting entities, one data symbol stream for each transmitting entity, wherein the data symbol stream for each transmitting entity is spatially processed with a steering vector for the transmitting entity and sent from a plurality of transmit antennas at the transmitting entity; and

   processing the plurality of received symbol streams in accordance with a receiver spatial processing technique to obtain a plurality of recovered data symbol streams, which are estimates of the plurality of data symbol ~~streams~~ streams,

   wherein the steering vector for each transmitting entity is derived by:

   decomposing a channel response matrix for the transmitting entity to obtain a plurality of eigenvectors and a plurality of singular values, and

   forming the steering vector for the transmitting entity based on an eigenvector corresponding to a largest singular value among the plurality of singular values.

2. (Original) The method of claim 1, wherein the receiver spatial processing technique is a channel correlation matrix inversion (CCMI) technique or a minimum mean square error (MMSE) technique.

3. (Original) The method of claim 1, wherein the receiver spatial processing technique is a successive interference cancellation (SIC) technique.

4.   **(Cancelled)**.

5.   **(Currently Amended)** The method of ~~claim 4~~ claim 1, wherein the steering vector for each transmitting entity is equal to the eigenvector corresponding to the largest singular value.

6.   **(Currently Amended)** The method of ~~claim 4~~ claim 1, wherein the steering vector for each transmitting entity contains a plurality of elements having same magnitude and phases equal to phases of a plurality of elements of the eigenvector corresponding to the largest singular value.

7.   **(Currently Amended)** ~~The~~ A method of ~~claim 1~~ receiving data in a multiple-input multiple-output (MIMO) communication system, ~~further~~ comprising:

        obtaining, from a plurality of receive antennas at a receiving entity, a plurality of received symbol streams for a plurality of data symbol streams sent by a plurality of transmitting entities, one data symbol stream for each transmitting entity, wherein the data symbol stream for each transmitting entity is spatially processed with a steering vector for the transmitting entity and sent from a plurality of transmit antennas at the transmitting entity;

        processing the plurality of received symbol streams in accordance with a receiver spatial processing technique to obtain a plurality of recovered data symbol streams, which are estimates of the plurality of data symbol streams;

        evaluating each of a plurality of sets of transmitting entities for possible transmission based on a metric and steering vectors for the transmitting entities in the set; and

        selecting a set of transmitting entities with a highest metric value for transmission.

8.   **(Currently Amended)** An apparatus at a receiving entity in a multiple-input multiple-output (MIMO) communication system, comprising:

        a plurality of receiver units operative to obtain from a plurality of receive antennas a plurality of received symbol streams for a plurality of data symbol streams sent by a plurality of transmitting entities, one data symbol stream for each transmitting entity, wherein the data symbol stream for each transmitting entity is spatially processed with a steering vector for the transmitting entity and sent from a plurality of transmit antennas at the transmitting entity; and

a receive spatial processor operative to process the plurality of received symbol streams in accordance with a receiver spatial processing technique to obtain a plurality of recovered data symbol streams, which are estimates of the plurality of data symbol ~~streams~~ streams,

> wherein the steering vector for each transmitting entity is derived by:

>> decomposing a channel response matrix for the transmitting entity to obtain a plurality of eigenvectors and a plurality of singular values, and

>> forming the steering vector for the transmitting entity based on an eigenvector corresponding to a largest singular value among the plurality of singular values.

9.   (Original) The apparatus of claim 8, wherein the receiver spatial processing technique is a channel correlation matrix inversion (CCMI) technique or a minimum mean square error (MMSE) technique.

10.   (**Cancelled**).

11.   (**Currently Amended**) An apparatus at a receiving entity in a multiple-input multiple-output (MIMO) communication system, comprising:

> means for obtaining from a plurality of receive antennas a plurality of received symbol streams for a plurality of data symbol streams sent by a plurality of transmitting entities, one data symbol stream for each transmitting entity, wherein the data symbol stream for each transmitting entity is spatially processed with a steering vector for the transmitting entity and sent from a plurality of transmit antennas at the transmitting entity; and

> means for processing the plurality of received symbol streams in accordance with a receiver spatial processing technique to obtain a plurality of recovered data symbol streams, which are estimates of the plurality of data symbol ~~streams~~ streams,

> wherein the steering vector for each transmitting entity is derived by:

>> decomposing a channel response matrix for the transmitting entity to obtain a plurality of eigenvectors and a plurality of singular values, and

>> forming the steering vector for the transmitting entity based on an eigenvector corresponding to a largest singular value among the plurality of singular values.

12.   (Original) The apparatus of claim 11, wherein the receiver spatial processing technique is a channel correlation matrix inversion (CCMI) technique or a minimum mean square error (MMSE) technique.

13.   **(Cancelled)**.

14-36. (Cancelled)

37.   (Original) A method of deriving steering vector for data transmission in a multiple-input multiple-output (MIMO) communication system, comprising:

obtaining a channel response matrix indicative of a response of a MIMO channel between a transmitting entity and a receiving entity in the MIMO system;

decomposing the channel response matrix to obtain a plurality of eigenvectors and a plurality of singular values, one eigenvector for each singular value; and

deriving the steering vector for the transmitting entity based on an eigenvector corresponding to a largest singular value among the plurality of singular values, and

wherein a plurality of steering vectors are derived for a plurality of transmitting entities and used for spatial processing by the plurality of transmitting entities to concurrently transmit a plurality of data symbol streams to the receiving entity.

38.   (Original) The method of claim 37, wherein the steering vector for each transmitting entity is the eigenvector corresponding to the largest singular value.

39.   (Original) The method of claim 37, wherein the steering vector for each transmitting entity contains a plurality of elements having same magnitude and phases equal to phases of a plurality of elements of the eigenvector corresponding to the largest singular value.

40.   (Original) An apparatus in a multiple-input multiple-output (MIMO) communication system, comprising:

a channel estimator operative to obtain a channel response matrix indicative of a response of a MIMO channel between a transmitting entity and a receiving entity in the MIMO system;

and

a controller operative to decompose the channel response matrix to obtain a plurality of eigenvectors and a plurality of singular values, one eigenvector for each singular value and to derive the steering vector for the transmitting entity based on an eigenvector corresponding to a largest singular value among the plurality of singular values, and

wherein a plurality of steering vectors are derived for a plurality of transmitting entities and used for spatial processing by the plurality of transmitting entities to concurrently transmit a plurality of data symbol streams to the receiving entity.

41.   (Original) An apparatus in a multiple-input multiple-output (MIMO) communication system, comprising:

means for obtaining a channel response matrix indicative of a response of a MIMO channel between a transmitting entity and a receiving entity in the MIMO system;

means for decomposing the channel response matrix to obtain a plurality of eigenvectors and a plurality of singular values, one eigenvector for each singular value; and

means for deriving the steering vector for the transmitting entity based on an eigenvector corresponding to a largest singular value among the plurality of singular values, and

wherein a plurality of steering vectors are derived for a plurality of transmitting entities and used for spatial processing by the plurality of transmitting entities to concurrently transmit a plurality of data symbol streams to the receiving entity.

42-52. (Cancelled)